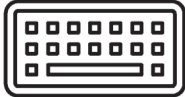# Appendix D   Connector Pins
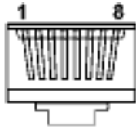
Enhanced Keyboard

Keyboard Connector		Pin	Signal
		1	Data
		2	Unused
		3	Ground
		4	+5 VDC
		5	Clock
		6	Unused

Mouse

Mouse Connector		Pin	Signal
		1	Data
		2	Unused
		3	Ground
		4	+5 VDC
		5	Clock
		6	Unused

Ethernet RJ-45

Ethernet Connector	Pin	Signal
	1	(+) Transmit Data
	2	(-) Transmit Data
	3	(+) Receive Data
	4	Unused
	5	Unused
	6	(-) Receive Data
	7	Unused
	8	Unused

Parallel Interface

Parallel Connector
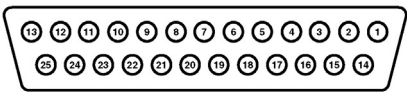
Pin	Signal	Pin	Signal	Pin	Signal
1	Strobe	7	Data Bit 5	13	Select
2	Data Bit 0	8	Data Bit 6	14	Auto Linefeed
3	Data Bit 1	9	Data Bit 7	15	Error
4	Data Bit 2	10	Acknowledge	16	Initialize Printer
5	Data Bit 3	11	Busy	17	Select IN
6	Data Bit 4	12	Paper End	18-25	Signal Ground

Serial Interface
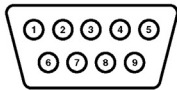
Serial Connector	Pin	Signal
	1	Carrier Detect
	2	Receive Data
	3	Transmit Data
	4	Data Terminal Ready
	5	Signal Ground
	6	Data Set Ready
	7	Request to Send
	8	Clear to Send
	9	Ring Indicator
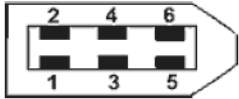
USB
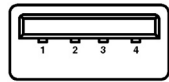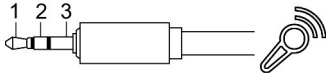
USB Connector	Pin	Signal
	1	+5 VDC
	2	- Data
	3	+ Data
	4	Ground
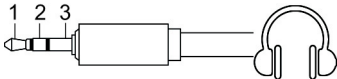
IEEE 1394

IEEE 1394 Connector	Pin	Signal
	1	power
	2	gnd
	3	tpb-
	4	tpb+
	5	tpa-
	6	tpa+
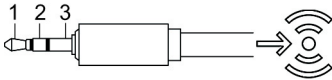
Microphone

Microphone Connector (1/8 inch)	Pin	Signal
	1 (Tip)	Audio
	2 (Ring)	Power
	3 (Shield)	Ground
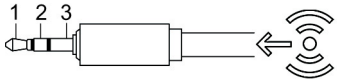
Headphone

Headphone Connector (1/8 inch)	Pin	Signal
	1 (Tip)	Audio_Left
	2 (Ring)	Audio_Right
	3 (Shield)	Ground

Line-in Audio

Line-in Audio Connector (1/8 inch)	Pin	Signal
	1 (Tip)	Audio_In_Left
	2 (Ring)	Audio_In_Right
	3 (Shield)	Ground

Line-out Audio

Line-out Audio Connector (1/8 inch)	Pin	Signal
	1 (Tip) 2 (Ring) 3 (Shield)	Audio_Out_Left Audio_Out_Right Ground

Ultra SCSI

Ultra SCSI connector
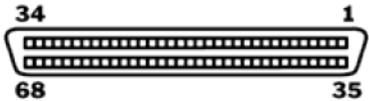
Pin	Signal	Pin	Signal
1	+DB12	35	-DB12
2	+DB13	36	-DB13
3	+DB14	37	-DB14
4	+DB15	38	-DB15
5	+DPB1	39	-DPB1
6	GND	40	GND
7	+DB0	41	-DB0
8	+DB1	42	-DB1
9	+DB2	43	-DB2
10	+DB3	44	-DB3
11	+DB4	45	-DB4
12	+DB5	46	-DB5
13	+DB6	47	-DB6
14	+DB7	48	-DB7
15	+DPB	49	-DPB
16	DIFFSENSE	50	GND
17	TERMPWR	51	TERMPWR
18	TERMPWR	52	TERMPWR

19	RES	53	RES
20	+ATN	54	-ATN
21	GND	55	GND
22	+BSY	56	-BSY
23	+ACK	57	-ACK
24	+RST	58	-RST
25	+MSG	59	-MSG
26	+SEL	60	-SEL
27	+C/D	61	-C/D
28	+REQ	62	-REQ
29	+I/O	63	-I/O
30	GND	64	GND
31	+DB8	65	-DB8
32	+DB9	66	-DB9
33	+DB10	67	-DB10
34	+DB11	68	-DB11

SATA

SATA Connector
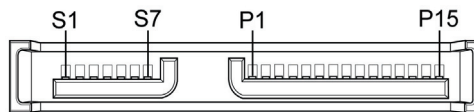
Pin	Signal	Pin	Signal	Pin	Signal
Data Cable		**Power Cable**		**Power Cable**	
S-1	Ground	P-1	3.3-V power	P-8	5-V power
S-2*	A+	P-2	3.3-V power	P-9	5-V power
S-3*	A-	P-3	3.3-V power	P-10	Ground
S-4	Ground	P-4	Ground	P-11	Reserved
S-5**	B-	P-5	Ground	P-12	Ground
S-6**	B+	P-6	Ground	P-13	12-V power

SATA Connector
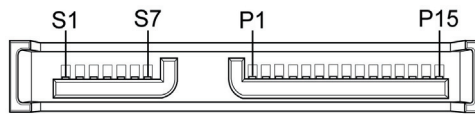
Pin	Signal	Pin	Signal	Pin	Signal
Data Cable		**Power Cable**		**Power Cable**	
S-7	Ground	P-7	5-V power	P-14	12-V power
* S2 and S3 differential signal pair **S5 and S6 differential signal pair				P-15	12-V power

Monitor (VGA)

VGA Connector
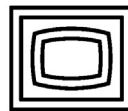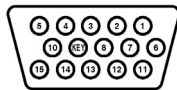
Pin	Signal	Pin	Signal	Pin	Signal
1	Red Analog	6	Ground	11	Monitor ID
2	Green Analog	7	Ground	12	DDC Serial Data
3	Blue Analog	8	Ground	13	Horizontal Sync
4	Monitor ID	9	+5V DC	14	Vertical Sync
5	Ground	10	Ground	15	DDC Serial Clock

NOTE: Monitor connectors can vary depending on your configuration.

Monitor (DVI)

DVI Connector
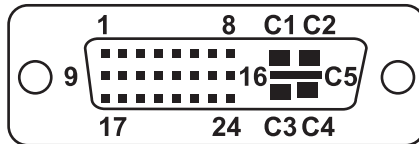
Pin	Signal	Pin	Signal
1	T.M.D.S DATA 2-	16	HOT PLUG DETECT
2	T.M.D.S DATA 2+	17	T.M.D.S DATA 0-

|			
3	T.M.D.S DATA 2/4 SHIELD	18	T.M.D.S DATA 0+
4	T.M.D.S DATA 4-	19	T.M.D.S DATA 0/5 SHIELD
5	T.M.D.S DATA 4+ 2	0	T.M.D.S DATA 5-
6	DDC CLOCK	21	T.M.D.S DATA 5+
7	DDC DATA	22	T.M.D.S CLOCK SHIELD
8	ANALOG VERT. SYNC	23	T.M.D.S CLOCK+
9	T.M.D.S DATA 1-	24	T.M.D.S CLOCK-
10	T.M.D.S DATA 1+		
11	T.M.D.S DATA 1/3 SHIELD	C1	ANALOG RED
12	T.M.D.S DATA 3-	C2	ANALOG GREEN
13	T.M.D.S DATA 3+	C3	ANALOG BLUE
14	+5V POWER	C4	ANALOG HORZ SYNC
15	GND	C5	ANALOG GROUND

ATA/ATAPI (IDE) Standard Drive Cable

ATA/ATAPI (IDE) Connector
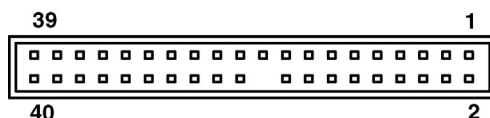
Pin	Signal	Pin	Signal	Pin	Signal
1	Reset	15	DD1	29	DMAK
2	Ground	16	DD14	30	Ground
3	DD7	17	DD0	31	INTRQ
4	DD8	18	DD15	32	IOCS16
5	DD6	19	Ground	33	DA1
6	DD9	20	(Key)	34	PDIAG (cable detect)
7	DD5	21	DMARQ	35	DA0
8	DD10	22	Ground	36	DA2
9	DD4	23	DIOW	37	CS1FX
10	DD11	24	Ground	38	CS3FX
11	DD3	25	DIOR	39	DASP
12	DD12	26	Ground	40	Ground
13	DD2	27	IORDY		
14	DD13	28	CSEL		

24-Pin Power (Main)
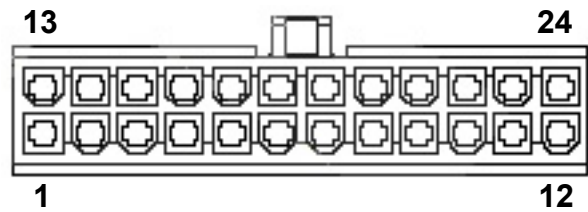
1	+3.3 V	8	POK	14	-12 V	21	+5 V
2	+3.3 V	9	+5 Vaux	15	GND	22	+5 V and
3	GND	10	+12 V-A	16	PS_ON_L		+5 V-Rsense
4	+5 V	11	+12 V-A	17	GND	23	+5 V
5	GND	12	+3.3 V	18	GND	24	GND
6	+5 V	13	+3.3 V and	19	GND		
7	GND		+3.3V-Rsense	20			

6-Pin Power (Auxiliary System Board)

⚠ **CAUTION** Be sure you can differentiate which power cable connects to the PCI Express x16 graphics card and which power cable connects to the system board. These two cables look very similar. The PCI Express power cable has a black connector and the power cable has a white connector. When power is present, you must NEVER connect the PCI Express power cable to the system board. If you do so, the system board may be damaged and your warranty voided. To see a picture of the PCI Express cable and where it must be connected, refer to the .

6-Pin Power (Auxiliary System Board) Connector	Pin	Color	Signal
	1	ORG	+3.3V
	2	ORG	+3.3V
	3	YEL	+12V-A
	4	BLK	GND
	5	BLK	GND
	6	YEL	-12 V
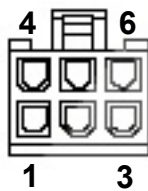
8-Pin Power (for Processors)

8-Pin Power (for CPUs)	Pin	Color	Signal
	1	BLK	GND
	2	BLK	GND
	3	BLK	GND
	4	BLK	GND
	5	WHT	+12VCPU0
		WHT	+12VCPU0 RSENSE
	6	WHT	+12VCPU0
	7	WHT with stripe	+12VCPU1
	8	WHT with stripe	+12VCPU1

6-Pin Power (Auxiliary PCI Express)

⚠ **CAUTION** Be sure you can differentiate which power cable connects to the PCI Express x16 graphics card and which power cable connects to the system board. These two cables look very similar. The PCI Express power cable has a black connector and the power cable has a white connector. When power is present, you must NEVER connect the PCI Express power cable to the system board. If you do so, the system board may be damaged and your warranty voided. To see a picture of the PCI Express cable and where it must be connected, refer to the "PCI or PCI Express Installation" section on page 84.
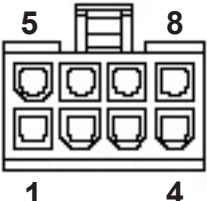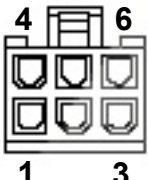
📝 **NOTE** The 6-pin power (auxiliary PCI Express) is only required with high-powered graphics cards.

6-Pin Power (Auxiliary PCI Express)	Pin	Color	Signal
	1	YEL	+12V-C
	2	YEL	+12V-C
	3	YEL	+12V-C
	4	BLK	GND

6-Pin Power (Auxiliary PCI Express)	Pin	Color	Signal
	5	BLK	GND
	6	BLK	GND